

to ask if it is impossible to find in the old world wealth and energy enough to copy one small branch of Prof. Henry's excellent work. I refer to the Smithsonian system of book exchanges, and I wish to know how much longer it is to continue easier and infinitely cheaper to exchange publications with one's correspondents in the other hemisphere than it is between London and Paris. Let me give an actual case. I recently sent two identical parcels of books, one to Utrecht and one to Washington. The former cost 5s. 6d., the latter cost nothing. In order that no one may run away with the idea that it would cost any very large sum to carry out this suggestion, I may remark that the Smithsonian system which is on a large scale, with agencies at Leipsic, Stockholm, Christiania, Copenhagen, Amsterdam, Paris, Milan, London, and Melbourne, besides its American ones, only costs 1,000*l.* per annum. We have only to copy on a diminished scale and to utilise existing agencies.

G. J. SYMONS

[See our note this week referring to an institution established at Haarlem.—ED.]

Dr. Cohn's Address

THERE is a passage in Dr. Cohn's address as reported in the Christmas number of NATURE (p. 137), which greatly needs correction:—

"Since, in the year 1842, an unknown physician in a Swabian country town, Dr. Mayer, of Heilbronn, pointed out that a hammer 424 kilogrammes in weight, which falls from the height of a metre on an anvil, raises the heat of the latter by one degree centigrade"

Leaving historical accuracy out of the question, this is a gross misstatement of the physical fact. The correct statement is that the whole heat generated by the blow (which will be partly taken up by the hammer and partly by the anvil) will be as much as would heat a kilogram of water one degree centigrade.

Malone Road, Belfast, Dec. 28

J. D. EVERETT

[Dr. Cohn's words are:—"Seit im Jahre 1842, ein unbekannter Arzt in einer schwäbischen Landschaft, Dr. Mayer von Heilbronn, nachgewiesen hatte, dass ein 424 Kilogramm schwerer Hammer, welcher einen Meter tief auf einen Ambos fällt, den letzteren um einen Centigrad erwärmt," &c. ED.]

Salmonidæ of Great Britain

SOME months ago I inquired through the columns of the *Fideli* newspaper if any sportsman, fisherman, or naturalist would oblige me by replying to the following queries respecting the rarer *Salmonidæ* of Great Britain. Firstly, whether *Salmo ferox* (the great lake trout) had ever been taken in any lake in Wales, and secondly, whether any of the Gwyniad tribe (*Coregoni*), such as the Gwyniad of Bala, the Vendace of Loch Maben, and the Powan of Ireland; or any of the Chars (*Salmo salvelinus*) have ever been taken in any lake which is not a glacial lake—that is to say, a lake which either lies in the tracks of an ancient glacier, or that is dammed up, or otherwise surrounded by moraine matter? The only reply with respect to the first query was from Sir Philip Egerton, to the purpose that he took a specimen of *Salmo ferox* in Bala Lake in 1871, thus establishing the fact that this fish still lingers in North Wales. To the second question I have received no reply. Is it possible that I may be more fortunate among the many naturalists and geologists who take NATURE?

Pendock, Tewkesbury

W. S. SYMONDS

Geographical Distribution of Dipterocarpeæ

MR. BENTHAM, in his address to the Linnean Society, delivered May 4, 1872, remarks in a note, "Dr. Hooker has, for instance, remarked that no *Dipterocarpeæ* have been found east of Borneo;" but that in the present state of our knowledge it is premature to endeavour to establish well-marked limits between the flora of the western and eastern portions of the Indian Archipelago.

Padre Blanco (no great authority, however), describes several species of *Dipterocarpus* found in the Philippine Islands, and I myself sent to Mr. Robert Brown seeds of two species, one of which in shape and size resembled the figure given by Lindley in his "Vegetable Kingdom," in his illustration of the genus. The seeds of *Dipterocarpus* are so peculiar, that a mistake is not easily made in determining most of the species. From some of those found

in these islands, valuable resins are collected. The wood of the trees, which are very large, is also of some economic value.*
Manila, Oct. 8 W. W. WOOD

Honest Cyclopædias

A FEW weeks ago Mr. A. R. Wallace asked in your columns if there existed such a thing as a cyclopædia which did not mislead or blind the inquirer by harassing and often useless cross references. As no one has yet answered Mr. Wallace's question, will you permit me to direct his attention to that admirable work, almost equivalent in its fullness to a cyclopædia and far superior to any cyclopædia I know in its recent and careful compilation, namely "Brande's Dictionary of Science," edited by the Rev. G. W. Cox. Rodwell's Dictionary is excellent, but is not so comprehensive as the last edition of Brande.

W. F. B.

"The Boring in Sussex"

ON the 9th inst. I was fortunate enough to find what I believe to be the *first fossil* from the Sub-Wealden boring at Netherfield, three or four shells of the genus *Cyclas*, in dark blue shale from a depth of 100 ft. There was also a small piece of what Dr. Bowerbank thinks is a *Paludina*.

As there are Wealden fossils, it is supposed that the borer has not yet got through the lower Wealden beds.

St. Leonard's, Dec. 17

J. E. H. PEYTON

Reflected Sunshine

THE recollection of a letter from Prof. Tyndall's pen, which appeared in NATURE some months ago, induces me to contribute an account of a curious sun effect recently seen from the summit of the Kudure Mukh, a hill nearly 6,200 ft. high.

The Ghauts here rise in bold scarps from the plains, large tracts of the latter being at this season under water, in preparation for the last rice crop.

Whilst resting one evening on the edge of the cliffs, I noticed as the sun declined that his reflection was approaching a series of sheets of water some six or eight miles off. Each of these pools cast upwards through the blue haze that overhung the plains a brilliant beam of light, the oblique rays from the water crossing those from the sun, and forming with them a chessboard pattern of light and shadow that was singularly beautiful.

As the sun dipped lower and his reflection fell full on the still expanse of water, the scene became almost magical. There shone a second sun at one's feet, its wealth of beams, undiminished in splendour, springing from the very bosom of the earth.

It required, indeed, but little stretch of imagination to fancy that a real sun was glaring up through some ghastly chasm in our globe. This phenomenon must be of frequent occurrence in many parts of the world, and wherever the distance between the observer and the reflecting surface is sufficient to greatly reduce the size of known objects, with which the eye naturally compares the apparent diameter of the reflected sun, the spectacle must always be a startling one.

Since my return from the district a friend who was camped at the Mukh prior to my visit there has told me that he also noticed the effect described above, and used to climb the hill every evening of his stay for the purpose of seeing it.

Mangalore, Nov. 21

E. W. PRINGLE

Electricity and Earthquakes

IT has been suggested that earthquakes may be caused by electrical discharges in the interior of the earth, and this may account for some remarkable effects of the great shocks which were so destructive to Manila in 1863.

It was observed that the effects of this earthquake were distributed in a peculiar manner over the comparatively small space occupied by the city and suburbs. On the banks of the river and canals, and through the northern quarter, great damage was done, while to the southward the mischief was comparatively slight. In parts of the town where large churches and other solidly-constructed edifices were ruined, other and slighter buildings placed near them escaped almost without injury. This was particularly noticed in the parish of Quiapo, where the church was

* The wood of one very large species, according to Padre Blanco, was formerly used in building the famous Acalpulco and Manila galleons, from the circumstance that, when pierced by cannon shot, it does not splinter in the way most other timber is found to do.

destroyed, while two very tall and isolated houses at a short distance escaped. One of these houses has a side-wall nearly 60 ft. high, and another one supported by other houses. The same partial effect was observed in other places, the terrestrial disturbance having been, as it were, distributed in veins or currents, in the line of which everything went down; but outside of these limits the damage done was comparatively slight. The exaggerated accounts published of the loss of life and injury to the city have probably never been exceeded.

We hear from the province of Albay (the southern extremity of the island of Luzon) that the grand volcano, the Mayon, was again in eruption, though at the last advices no damage had been done. This is perhaps the most beautifully symmetrical volcano in the world. From almost every point of view the outline is equally elegant. A few years ago I was fortunate in witnessing a fine eruption of the Mayon, which lasted for many days. By means of a powerful telescope I was able to watch its progress from a station at the base of the mountain. The ejected matter appeared to be red-hot stones only,* nothing like lava streams being visible. Indeed most of the volcanos of the Philippines throw out only scoria, ashes, and, it is said, in some cases hot water; but all information on these subjects is so liable here to gross exaggeration, that little dependence can be placed on anything but personal observation.

Another volcano, about 20 or 25 miles from the Mayon, called the Bulusan, which has been dormant for many years, began to throw out columns of smoke soon after the eruption of the Mayon, which I witnessed.

I regret I have not been able to ascertain whether these volcanic disturbances have had any effect upon the thermal springs of Tivai at the base of the Mayon in causing an intermission in the flow, &c. The waters of these springs, which are very limpid, deposit large quantities of silicious scuter, which encloses anything thrown into them. I have a piece of ordinary mat, which, in vulgar phrase, is completely petrified. The temperature is nearly boiling; but it is dangerous to approach the openings too nearly, and thermometrical experiments are difficult. Some of the concretions from certain parts of these springs are very massive, and when broken appear to be a nearly transparent siliceous.

Manila, Oct. 7

W. W. WOOD

P.S.—The post brings further accounts of the new eruption of the Mayon, which has assumed a formidable character, and is said to be the most violent which has occurred for many years. Some lives have been lost among the natives, who have their Manila hemp plantation on the flanks of the volcano, and great apprehension prevailed in all the villages around the base of the mountain. The new volcano on the island of Camiguin remains in a semi-active state—smoking, but without any regular eruption. Those who have visited it lately report that it is steadily increasing in volume, the irregular mass becoming larger daily, and working toward the sea. The inhabitants have generally returned to the island, but the villages in the immediate neighbourhood of the volcano are still deserted. Camiguin is important from its plantations of Manila hemp (*Musa textile*), and a good deal of capital is invested in them.

Oct. 10

Atmospheric Refraction

If Mr. Wallace is still in search of facts on unusual atmospheric refraction, I would refer him in the first place to "Scoresby's Arctic Regions," and Scoresby's "Greenland," in both of which works very full and accurate information is given as to facts observed by the author; in the second place to the Phil. Trans. for 1798, 1799, and 1800, containing papers by Latham, Vince, and Wollaston; thirdly, to "Annales de Chimie," first series, vols. 29 and 39; the former containing a paper by Monge at p. 207, and the latter a paper by Gorse at p. 211.

More recent observations are described in NATURE for July 28 and August 25, 1870, and August 25, 1872.

If any of your readers can inform me of any important contributions to the literature of Mirage besides these above mentioned I shall be greatly obliged.

J. D. EVERETT

* These appeared as if slowly pushed up from the interior of the crater, and, rolling out over its edges, went thundering down the cone, throwing out showers of fire as they struck the rocks or each other. This eruption was well seen by me from two opposite stations, and was said to have been equally fine when viewed from all sides of the mountain.

BIELA'S COMET*

"BIELA'S Comet is my subject this time. A startling telegram from Prof. Klinkerfues on the night of Nov. 30 ran thus:—'Biela touched Earth on 27th: search near Theta Centauri.'

"I was on the look-out from comet-rise (16^h) to sunrise the next two mornings, but clouds and rain disappointed me. On the third attempt, however, I had better luck. Just about 17^h mean time, a brief blue space enabled me to find *Biela*, and though I could only get four comparisons with an anonymous star, it had moved forward 2^s.5 in four minutes, and that settled its being the right object. I recorded it as—'Circular; bright, with a decided nucleus, but no tail, and about 45" in diameter.' This was in strong twilight. Next morning, Dec. 3, I got a much better observation of it; seven comparisons with another anonymous star; two with one of our current Madras Catalogue Stars, and two with 7734 Taylor. This time my notes were—'Circular; diameter 75"; bright nucleus; a faint but distinct tail, 8' in length and spreading, a position angle from nucleus about 280°.' I had no time to spare to look for the other comet, and the next morning the clouds and rain had returned.

"If I get another view before posting this I may be able to add a hasty postscript. The positions, the first rough, the second pretty fair from the two known stars, are—

	Madras M.T.			R.A.			(Apparent) P.D.		
	h	m	s	h	m	s	°	'	"
Dec. 2	17	33	21	14	7	27	124	46	
3	17	25	17	14	22	2'9	125	4	28

HINTS ON COLLECTING ARACHNIDA

IT having been suggested to me by Mr. Slater that a few hints on the collecting of *Arachnida* might be of use for natural history collectors and travellers in foreign parts, I have had great pleasure in drawing up the following notes on the subject, and shall be glad to receive collections of these animals from any part of the world.

1.—What are *Arachnida*?

These are Spiders, Scorpions, Harvestmen, and Mites with several other allied groups (which have no English names), such as the *Thelyphonidae*, semi-scorpion-like creatures with a slender palpiiform tail, and of considerable size; the *Phryniidae*, short-bodied creatures of a somewhat spiderish appearance, but often of large size, with a horny skin, and fore-legs of immense length and great slenderness; and the *Solpugidae*, creatures which, if they can be said to resemble any others, are perhaps more like abnormal-looking spiders with a heavy head and great double jaws than anything else.

2.—What places do *Arachnida* live in?

Little need be said on this, for there is no place so barren, or so fertile, or so wet, or so dry, or so stony, but that some, and generally most, of the *Arachnida* may be found in it. Collectors abroad are often prevented from collecting birds or insects by weather, but *Arachnida* may be got in any weather, even if the collector be confined to the house. Numerous species may be found in corners and crevices; beneath old bark, or detached rocks and stones, myriads of spiders haunt. They are also to be found among moss and debris in damp places, in holes, in banks and river-sides; among the lower stems of grass and rank herbage, and the borders of swamps and ponds; on tree trunks, among lichens, on bushes, in blooms of flowers—in fact, to repeat it, everywhere; often moving in the hottest sunshine, and often concealed during the day, coming abroad at dusk and in the night.

3.—How to collect *Arachnida*.

The mere modes of capturing them need not be much detailed; there is an advantage in respect to *Arachnida* over all the *Insecta* in their being unable to fly. The

* Extract of a letter from Mr. N. R. Pogson, Madras Observatory, to the Astronomer Royal, dated Dec. 5, 1872.